

WHAT IS CLAIMED IS:

1. An article comprising a matrix polymer and clay wherein said clay is intercalated with a block copolymer, wherein said block copolymer comprises a hydrophilic block capable of intercalating said clay and a matrix compatible block compatible with said matrix polymer.
2. The article of claim 1 wherein said matrix polymer comprises polyester.
3. The article of claim 2 wherein said polyester is selected from the group comprising poly(ethylene terephthalate), poly(butylene terephthalate), poly(1,4-cyclohexylene dimethylene terephthalate), poly(ethylene naphthalate) and amorphous glycol modified poly(ethylene terephthalate).
4. The article of claim 1 wherein said hydrophilic block comprises at least one member selected from the group of poly(alkylene oxide), poly 6, (2-ethyloxazolines), poly(ethyleneimine), poly(vinylpyrrolidone), poly(vinyl alcohol), polyacrylamides, polyacrylonitrile, polysaccharides and dextrans.
5. The article of claim 1 wherein said hydrophilic block comprises at least one member selected from the group consisting of poly(alkylene oxide), poly 6, (2-ethyloxazolines), polysaccharide, poly(vinylpyrrolidone), poly(vinyl alcohol), poly(vinylacetate).
6. The article of claim 1 wherein said hydrophilic block comprises poly(ethylene oxide).
7. The article of claim 1 wherein said hydrophilic block comprises polysaccharide.

8. The article of claim 1 wherein said hydrophilic block comprises poly(vinyl pyrrolidone).

9. The article of claim 1 wherein said hydrophilic block comprises poly(vinyl acetate).

10. The article of claim 1 wherein said matrix compatible block comprises polyester.

11. The article of claim 1 wherein said matrix compatible block consists of at least one member selected from the group consisting of polyester, acrylic, amide, polypropiolactone, poly β -butyrolactone, poly δ -valerolactone, poly ϵ -caprolactam, or polycaprolactone.

12. The article of claim 1 wherein said clay comprises smectite clay.

13. The article of claim 1 wherein said clay comprises synthetic smectite clay.

14. The article of claim 1 wherein said clay comprises layered double hydroxide clay.

15. The article of claim 1 wherein said block copolymer comprises three blocks.

16. The article of claim 1 wherein said block copolymer comprises two blocks.

17. The article of claim 1 wherein said block copolymer has the structure A-B-A, wherein A is a hydrophilic member selected from the group comprising poly(alkylene oxide), poly 6, (2-ethyloxazolines), poly(ethyleneimine), poly(vinylpyrrolidone), poly(vinyl alcohol), polyacrylamides, polyacrylonitrile, polysaccharides and dextrans and B is an oleophilic member selected from the group comprising of polyester, acrylic, amide, polypropiolactone, poly β -butyrolactone, poly δ -valerolactone, poly ϵ -caprolactam, or polycaprolactone .

18. The article of claim 1 wherein said block copolymer has the structure A-B, wherein A is a hydrophilic member selected from the group comprising poly(alkylene oxide), poly 6, (2-ethyloxazolines), poly(ethyleneimine), poly(vinylpyrrolidone), poly(vinyl alcohol), polyacrylamides, polyacrylonitrile, polysaccharides and dextrans and B is an oleophilic member selected from the group comprising of polyester, acrylic, amide, polypropiolactone, poly β -butyrolactone, poly δ -valerolactone, poly ϵ -caprolactam, or polycaprolactone.

19. The article of claim 1 wherein said block copolymer has the structure A-B-A, wherein A is a member selected from the group comprising poly(alkylene oxide), poly 6, (2-ethyloxazolines), polysaccharide, poly(vinylpyrrolidone), poly(vinyl alcohol), poly(vinylacetate) and B is a member selected from the group comprising polyester, polycaprolactone, polyamide.

20. The article of claim 1 wherein said block copolymer comprises three blocks and said matrix comprises a copolymer compatible with at least one block of said copolymer.

21. The article of claim 1 wherein said block copolymer comprises three blocks and said matrix comprises a blend of polymers compatible with at least one block of said copolymer.

22. The article of claim 1 wherein individual polymers in the blend of copolymers are compatible with separate blocks of said copolymers.

23. The article of claim 1 wherein said matrix compatible block comprises 50 to 500 monomer repeat units of caprolactone and said polymer matrix comprises polyester.

24. The article of claim 1 wherein said block copolymer further comprises a block that does not intercalate clay.

25. The article of claim 24 wherein said block copolymer that does not intercalate clay comprises polyester

26. The article of claim 1 wherein said block copolymer further comprises a block comprising an oleophilic polymer.

27. The article of claim 1 wherein the ratio by weight of clay to block copolymer is between 1 : 99 and 99 : 1.

28. The article of claim 1 wherein the ratio by weight of clay to block copolymer is between 80 : 20 and 60 : 40.

29. The article of claim 1 wherein said clay has an aspect ratio of >10:1.

30. The article of claim 1 wherein said article is a support.

31. The article of claim 1 wherein said article is a layer in a multilayer structure.

32. The article of claim 1 wherein said clay comprises a weight % less than 70%.

33. The article of claim 1 wherein said clay comprises a weight % less than 20%.

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